

### Remarks

Claims 10, 16 and 21 have been amended with the details set forth in Attachment I (Version with Markings to Show Changes Made). New Claims 21-28 have been added. Following filing of a Brief on Appeal on February 5, 2002, prosecution has been reopened.

### The 35 USC 102 Rejection

Claims 10, 12-18, and 21 are rejected under 35 USC 102(b) as anticipated by van Gerwen et al. In this reference, the electrodes are located across the channel from each other and not in spaced relation along a length of said channel as set forth in Claims 10 and 16, as now amended. In addition, this reference failed to teach the features of Claims 12-14, 17, 18, and 21, since both electrodes of the references are not located on the surface of the channel as clearly seen in 6a – 6b and 7a – 7b. Thus, this reference fails to teach each feature set forth in Claims 10, 12-18, and 21, particularly as now amended, and thus fails to support a rejection of these claims under 35 USC 102. The rejection should be withdrawn.

### The 35 USC 103 Rejections

Claims 10, 12-13, 16 and 20-21 are rejected under 35 USC 103(a) as unpatentable over Clark et al in view of Kipling et al. As now amended, Claims 10 and 16 set forth that the electrodes are spaced along a length of the fluidic channels, which feature is not taught by either references. Thus, this rejection should be withdrawn.

Claims 11, 14 and 17-19 are rejected under 35 USC 103(a) as unpatentable over Clark et al in view of Kipling et al and further in view of Taylor et al. These claims depend from either Claim 10 or Claim 16. As pointed out above, neither the primary or secondary references teach or suggest the feature now added to parent Claims 10 and

16. The reference Taylor et al also fails to teach or suggest this added feature.

Accordingly, this rejection should be withdrawn.

Claim 15 is rejected under 35 USC 103(a) as being unpatentable over Clark et al in view of Kipling et al, and further in view of Stetter et al. As pointed out above, neither Clark et al or Kipling et al teach the electrode arrangement now set forth in parent Claim 10. Stetter et al was applied to teach the use of an AC power source, and the addition of such a source to Clark et al would not teach or suggest the features of Claim 15 which includes the features of parent Claim 10. Thus, this rejection should be withdrawn.

Claims 11 and 19 are rejected under 35 USC 103(a) as unpatentable over van Gerwen et al in view of Taylor et al. These claims depend from Claims 10 and 16 and as pointed out above, the primary reference fails to teach the feature added to the parent claims. Taylor et al also fails to teach this added feature. Thus, this rejection should be withdrawn.

#### Conclusion

In view of the amendments to the claims and the foregoing comments, each rejection is believed overcome, and Claims 10-21 are deemed to be allowable. Thus, this application is in condition for allowance based on Claims 10-21 and new Claims 22-28.

Respectfully submitted,

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Enclosure:  
Attachment I



Attachment I  
S.N. 09/737,542

Version with Markings to Show Changes Made

In The Claims:

Claims 10, 16, 21 have been amended to read as follows:

10. (Amended) An apparatus for determining the trapping of pathogen by antibodies deposited in a fluidic channel, comprising:

a fluidic channel having at least one pair of spaced electrodes localized along a length of said fluidic channel [therein],

antibodies located on said spaced electrodes,

means for producing an electric field across said spaced electrodes, and

an impedance sensor for measuring impedance between said spaced electrodes.

16. (Amended) A sensor using impedance measurements to detect the presence of pathogens attached to antibodies, comprising:

a microfluidic device having at least one microchannel therein,

spaced electrodes located on a surface along a length of said microchannel,

antibodies located on said spaced electrodes,

an AC or DC power supply for producing an electric field across said spaced electrodes, and

means for measuring impedance between said spaced electrodes.

21. (Amended) The sensor of Claim 16[1], wherein the at least one pair of spaced electrodes is formed within the fluidic channel.

The following Claims have been added:

22. The apparatus of Claim 1, wherein said spaced electrodes are located in a bottom surface of said fluidic channel.

23. The sensor of Claim 16, wherein said spaced electrodes are located in a bottom surface of said at least one microchannel.

24. In an apparatus for determining the trapping of pathogen by antibodies deposited in a fluidic channel, the improvement comprising:

at least one pair of spaced electrodes located on a surface and along a length of said fluidic channel,

antibodies located on said spaced electrodes,

means for producing an electric field across said spaced electrodes, and

an impedance sensor for measuring impedance between said spaced electrodes.

25. The improvement of Claim 24, wherein said surface is a bottom surface of said fluidic channel.

26. The improvement of Claim 24, additionally including at least another pair of spaced electrodes having an electric field thereacross and provided with antibodies thereon.

27. The improvement of Claim 26, wherein said pairs of spaced electrodes constitute adjacent fingers of an interdigitated electrode formed on said surface of said fluid channel.

28. The improvement of Claim 27, wherein said interdigitated electrode is at least partially located on a bottom surface of said fluidic channel.



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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT

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Serial No.	: 09/737,542	Art Unit	: 1641
Filed	: December 14, 2000	Examiner	: K. Padmanabhan
For	: Impedance Measurements for Detecting Pathogens Attached to Antibodies		

Commissioner for Patents  
Washington, D.C. 20231

EXPRESS MAIL CERTIFICATE

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Date of Deposit 5-1-02

I hereby certify that the following *attached*

1. Amendment (5 pages)

Attachment I – Version with Markings to Show Changes Made (2 pages)

2. Return postcard

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